

Invasive Insect Threats to Maine Forests

Maine Forest Service
Forest Entomologists

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Photo: USFWS

What are invasive species?

- Are not naturally found in the area
- Cause harm to:
 - environment
 - economy
 - human health

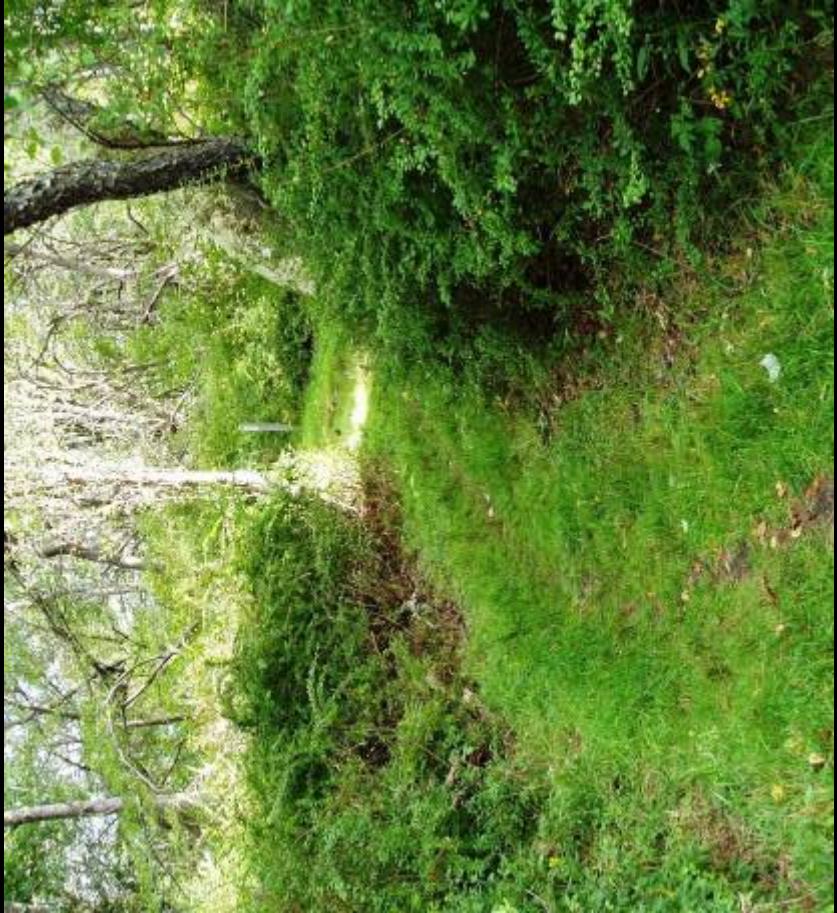


Photo: Jennifer D'Appollonio, University of Maine, Orono

Familiar invasive forest pests

Browntail Moth



Photo: Wisconsin Lake Shore Preserve



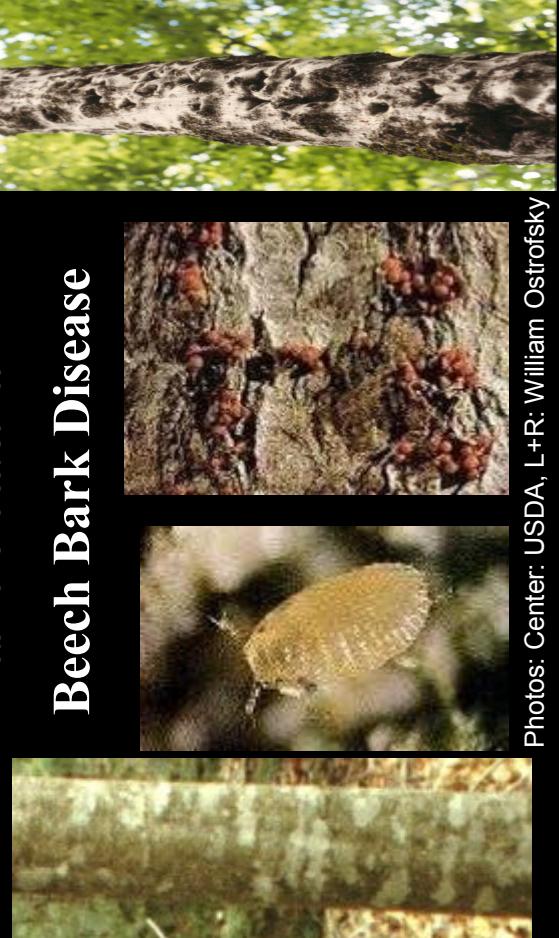
Photo: Maine Forest Service

Chestnut Blight



Photos: Maine Forest Service

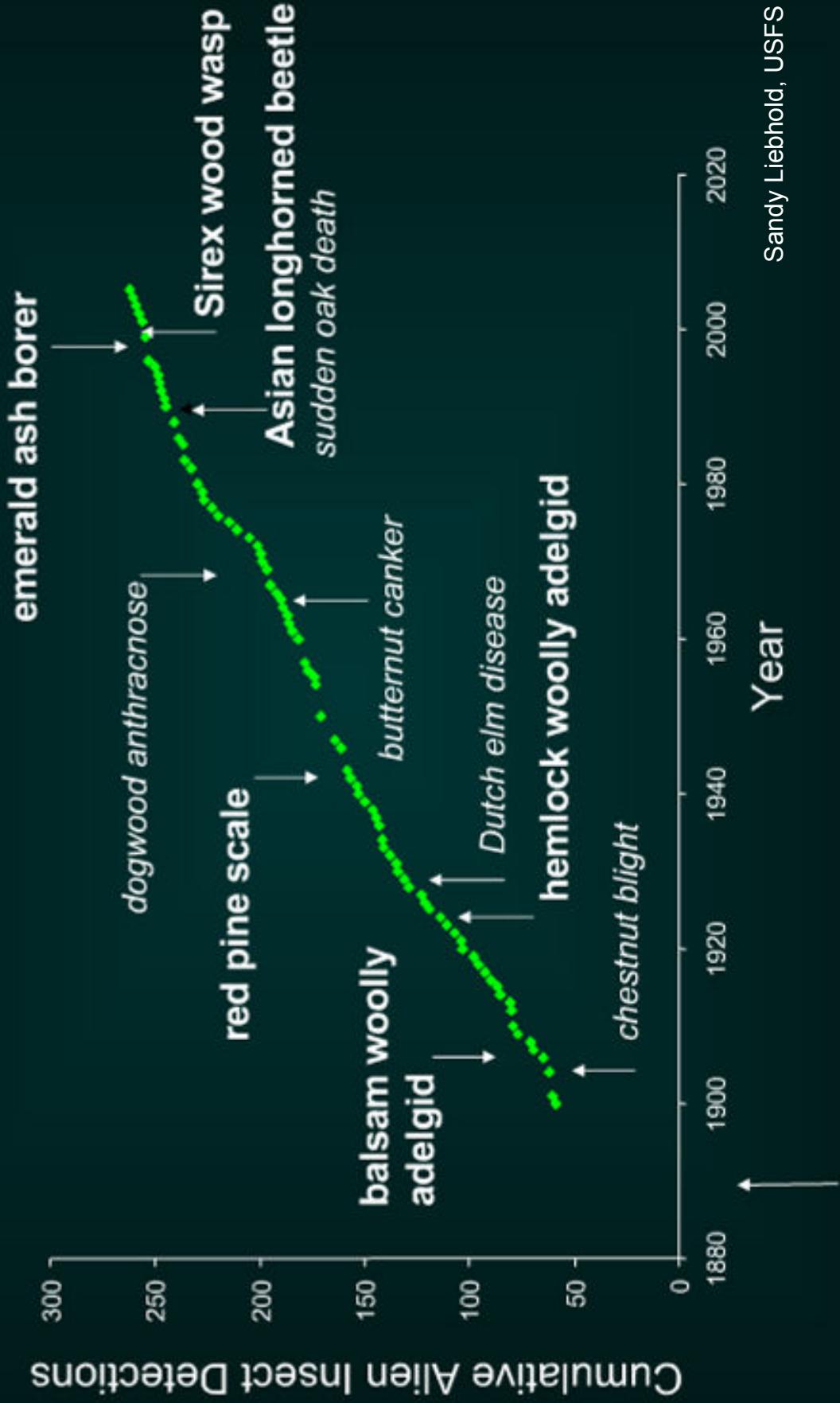
Beech Bark Disease



Photos: Center: USDA, L+R: William Ostrofsky

Healthy Beech + Scale + Fungus = Disease

Some Notable Insect & Disease Introductions



Many Invasive Pests Can Be Moved in Firewood

- Firewood
 - Recreational
 - Camp owners
 - Commercial dealers



Photo: Troy Kimoto

Take Home Message:

Buy firewood locally.

*Try not to buy firewood harvested
more than 50 miles away.*

Firewood--recreational

Leave your Firewood at Home



Buy It Where You Burn It
Don't Give Bugs a Free Ride!

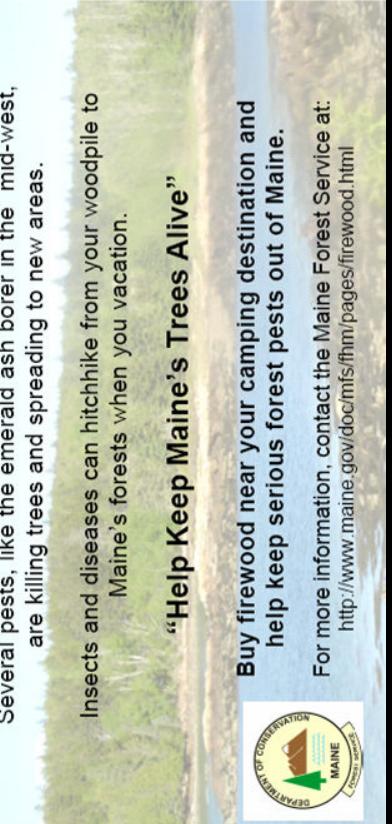


Pack marshmallows.
Not firewood.



www.StopTheBeetle.info
United States Department of Agriculture

Don't move firewood. Buy it at your destination.



Please leave your firewood
at home

- Buy local firewood
- Travel with kiln-dried wood

If you brought firewood from
home, please burn it
within 24 hours

Several pests, like the emerald ash borer in the mid-west,
are killing trees and spreading to new areas.

Insects and diseases can hitchhike from your woodpile to
Maine's forests when you vacation.

"Help Keep Maine's Trees Alive"

Buy firewood near your camping destination and
help keep serious forest pests out of Maine.

For more information, contact the Maine Forest Service at:
<http://www.maine.gov/doc/mfm/pages/firewood.html>



Photos: Maine Forest Service

Asian Longhorned Beetle (ALB)



Photo: Kenneth R. Law, USDA APHIS PPQ, United States



Pennsylvania Department of Conservation and Natural Resources - Forestry Archive

**Invasion Pathway:
Solid Wood Packing Material**

**Spread:
Firewood, Nursery Stock**



Photo: E. Richard Hoebeke

Recognizing ALB



- Photo: USDA APHIS
- **Large**—1.25 to 1.5 inches—larger than a paper clip
 - **Shiny**—like a bowling ball, patent leather, or a new car
 - **Black**—deep dark black (not sort of black, no traces of brown)
 - **White markings**—bold stripes on antennae, distinctive blotches on back (blue feet when alive)

Comparison of ALB with native beetles

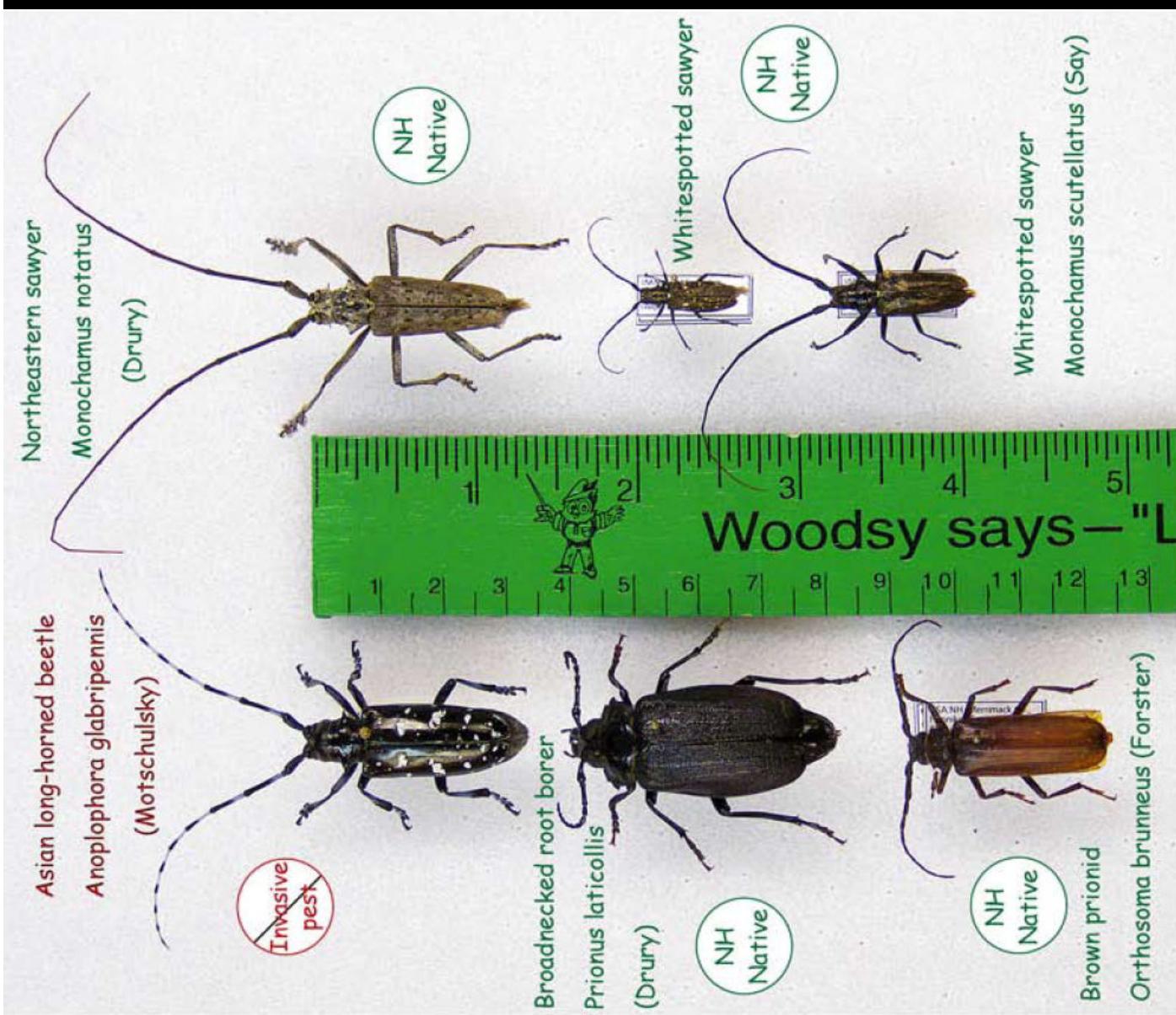


Photo: NH DRED Forest Health

Recognizing ALB

A heavily infested tree
can look reasonably healthy

But look for...



Photo: USDA APHIS

Recognizing ALB



**Large exit holes
(size of pencil or larger)**

Photo: E. Richard Hoebeke



**Tunnels
within the
wood**



**Egg niches
(chewing marks visible)**

Photo: Massachusetts Introduced Pests Outreach Blog

Photo: UMassExtension

Recognizing ALB

Sawdust or wood shavings on limbs

Photos: USDA APHIS



Adult feeding along midribs of leaves



Oozing foaming sap



**Hosts: Maple, Birch, Willow, Elm
Poplar, Horse-chestnut, Ash, Mountain-ash**

Photos: USDA APHIS

Closest Known Infestation <110 Mi.

- Worcester, Mass and surrounding area
- Detected in August 2008 (**was present for 8-15 years before detection!**)
- High potential for **legal and innocent** movement of infested wood to homes, camps, campgrounds in Maine



Photo: Ohio DNR Division of Forestry Asian Longhorned Beetle

Alien Forest Pest Explorer

www.fs.fed.us/ne/morgantown/4557/AFFPE/

Pest Distribution Map

Asian Longhorned Beetle *Anoplophora glabripennis*



Distribution as of Sept. 22, 2008



2

0 300 600 900
0 460 Km
0 300 300 Mi



Northern Research Station



Forest Health Technology Enterprise Team

Also in New York, NY, New Jersey, and Toronto, ON and eradicated from Chicago.

Emerald Ash Borer (EAB)



Photo: David Cappaert, Michigan State University



Photo: Troy Kimoto

**Invasion Pathway:
Solid Wood Packing Material**

**Spread:
Firewood, Nursery Stock**

Recognizing EAB



Photo: Ohio Tree Care, Inc.

Over 75% of new infestations caused by firewood



Photo: H. Russell, Michigan State University

- Exotic beetle (from Asia)
- Bright metallic green
- $\frac{1}{2}$ inch long
- Bores under bark of ash trees

Recognizing EAB



D-shaped exit holes

Photo: University of Wisconsin Entomology



Photo: Oregon Department Of Agriculture, Plant Division



Serpentine tunneling under bark

Photo: David Roberts, MSU

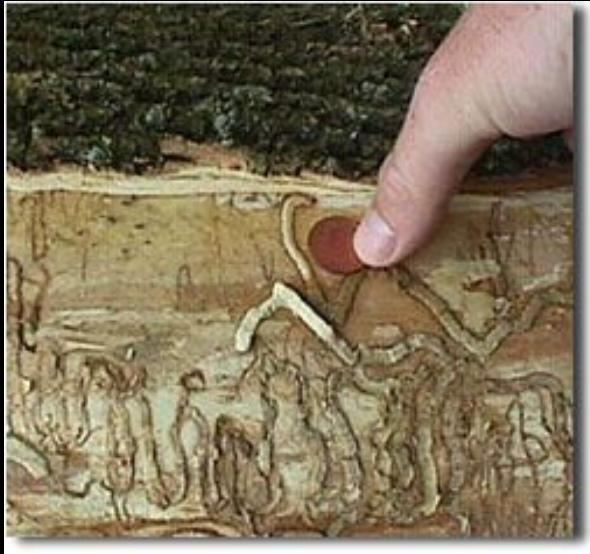


Photo: Maryland Department of Natural Resources

Bark splitting

Recognizing EAB



Photo: David R. McKay
**Crown decline
(from top down)**



Epicormic growth
Photo: Pennsylvania Department of Conservation
and Natural Resources - Forestry Archive

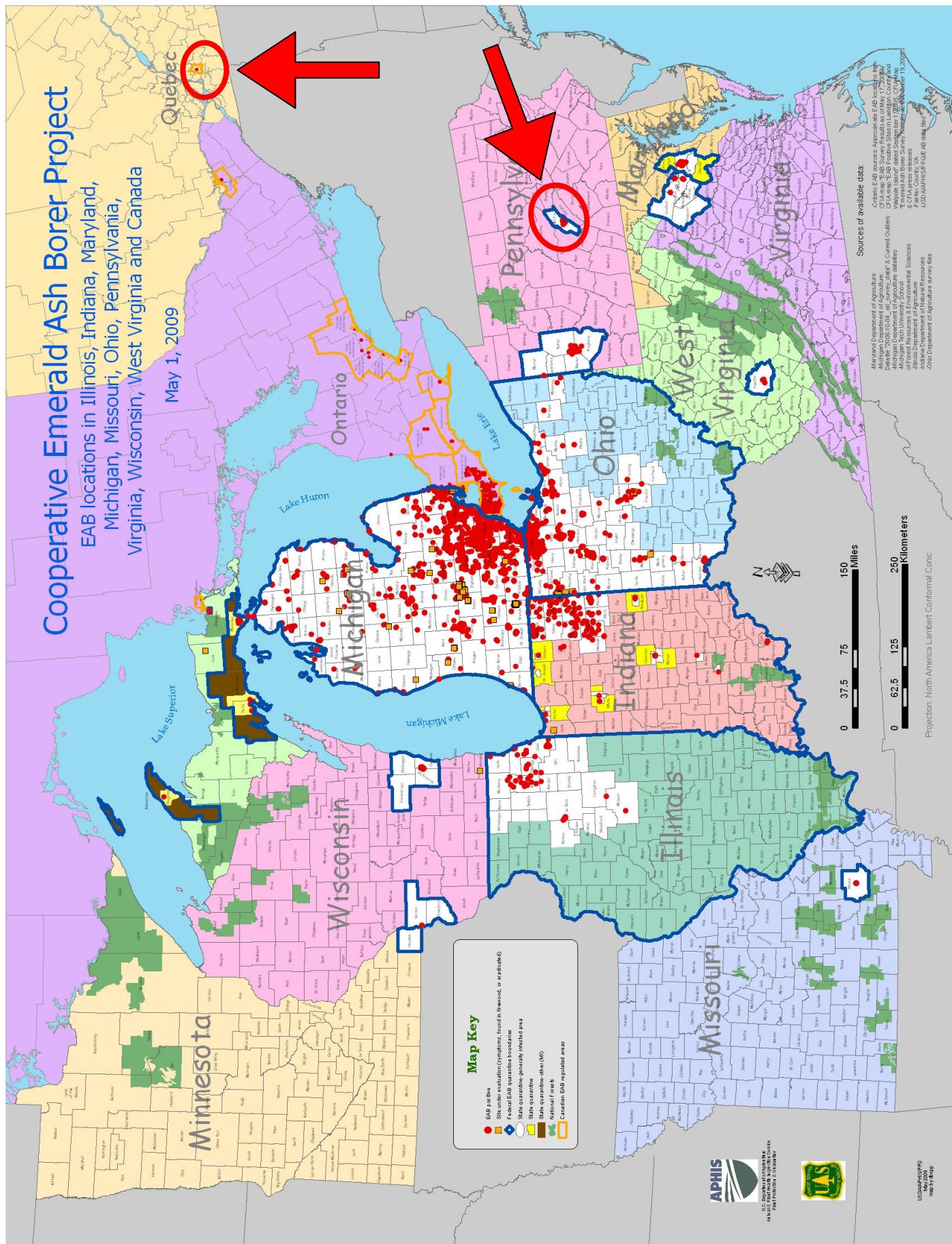
Impact

- Hosts

- Attacks **all** species of North American ash
- Kills **all** of the trees it attacks
- Has killed over 40 million trees since 2002
- Has the potential to wipe out whole genus of ash



Photo: Maine Department of Agriculture



News Release: Feb 25, 2009

“...Emerald ash borer has been discovered in Central Pennsylvania in Mifflin County. The infestation has most likely been there for several years. We will be coordinating our DCNR efforts with the PA Emerald Ash Borer Task Force. The infestation was reported by a landowner who sent digital photos...”

Statement: Pennsylvania Department of Agriculture

Brown Spruce Longhorned Beetle

- In Nova Scotia
- Kills all species of spruce
- Came in to Port of Halifax,
NS before 1998
- Starting to see spread after
hurricane in 2004 damaged
wide area of forest



Photo: Georgette Smith

Brown Spruce Longhorned Beetle

Tetropium fuscum

- Look for resin covered trunks
- Round to D-shaped 1/8" exit holes
- Can also attack fir, larch, pine



Photo: Jon Sweeney

Hemlock Woolly Adelgid (HWA)

-Already in Southern Maine-



Invasion Pathway:

Accidental Introduction, Ornamental planting

Spread:

Eggs, crawlers on wind, vehicles, clothing, birds, mammals, etc.; all stages on live hemlock material

Background: Maine Forest Service Upper Image: Stanton Gill, University of Maryland Lower Image: Rusty Rhea, USDA Forest Service

Recognizing HWA



Photo: Maine Forest Service

- Hemlock
- ~1/8" or less discrete white woolly masses
- On undersides of branches
- On outer portions of branch
- Most stages immobile
- Branch dieback bottom up (vs. borer, mite)

Where in Maine is HWA found?

2003

Kittery, York

2004

Wells

2005

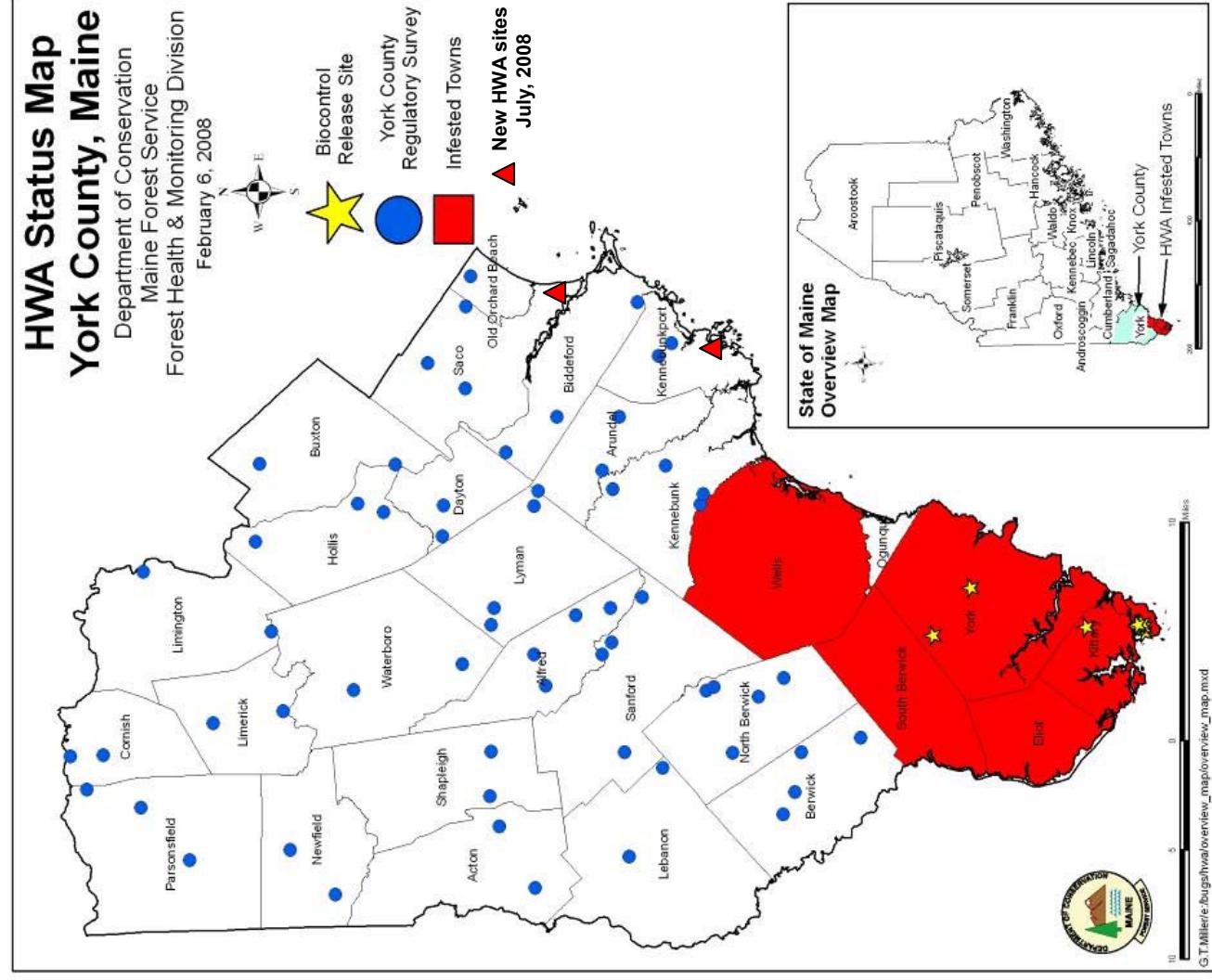
Elliot, South
Berwick

2008

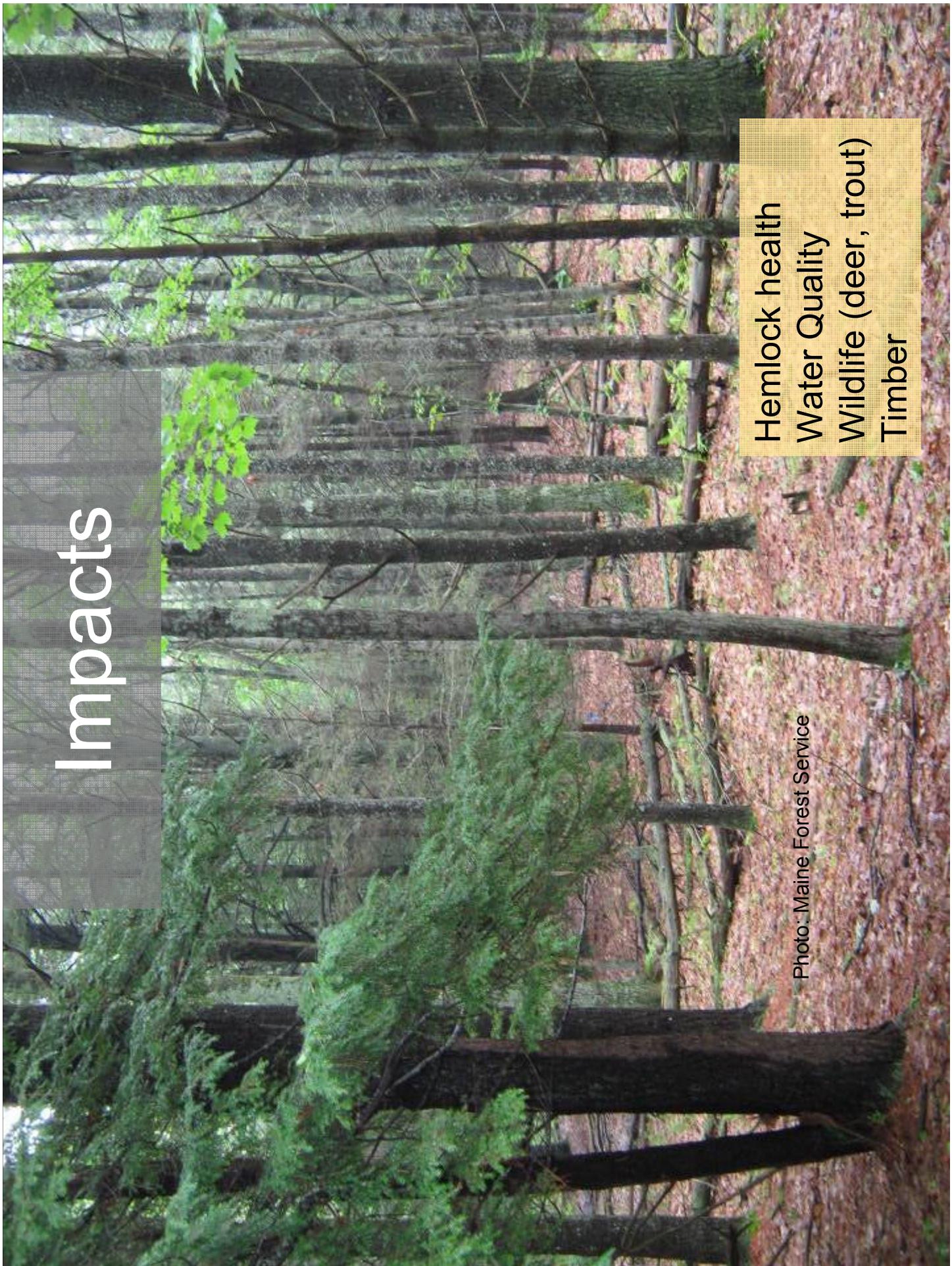
Saco,
Kennebunkport

Scattered Infestations

*Note: Ogunquit is
within the HWA
quarantine.*



Impacts



Hemlock health
Water Quality
Wildlife (deer, trout)
Timber

Photo: Maine Forest Service

Should I really worry, Or are you just trying to scare me?

Detection methods are poor and infestations are usually not found early.

(ALB in Worcester 8-15 years before noticed)

Many of these pests may already be here: ALB, EAB

You are the best ally for your forest

There are very few entomologists state-wide – we need your help

Therefore: Be informed.

Know your forest, know what it should look like, report concerns/changes.

Know invasive threats, know what to look for, report concerns.

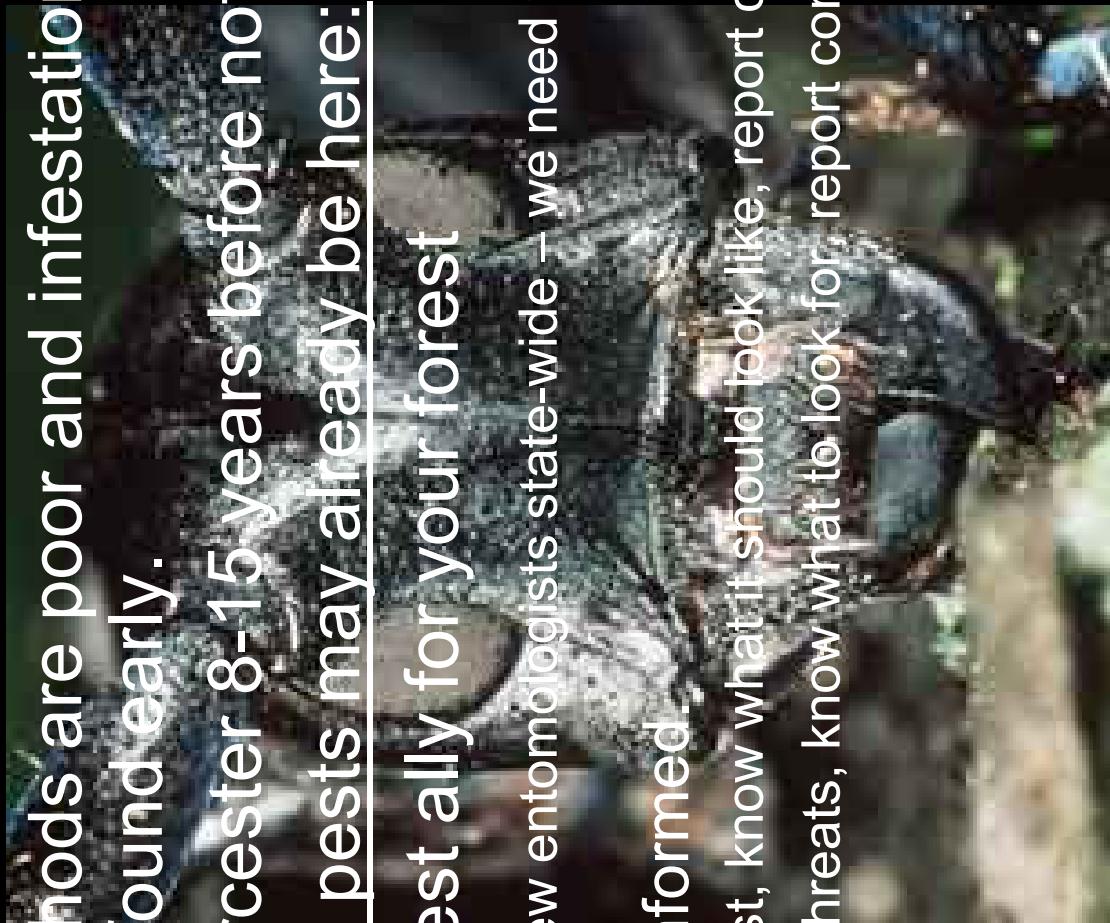


Photo: USFWS